

Asset price boom-bust cycles and credit: what is the scope of macro-prudential regulation?

by V. Borgy, L. Clerc and J.P. Renne



Financial Stability: Towards a Macroprudential Approach

HKIMR – BIS conference

Hong Kong SAR, 5-6 July 2010

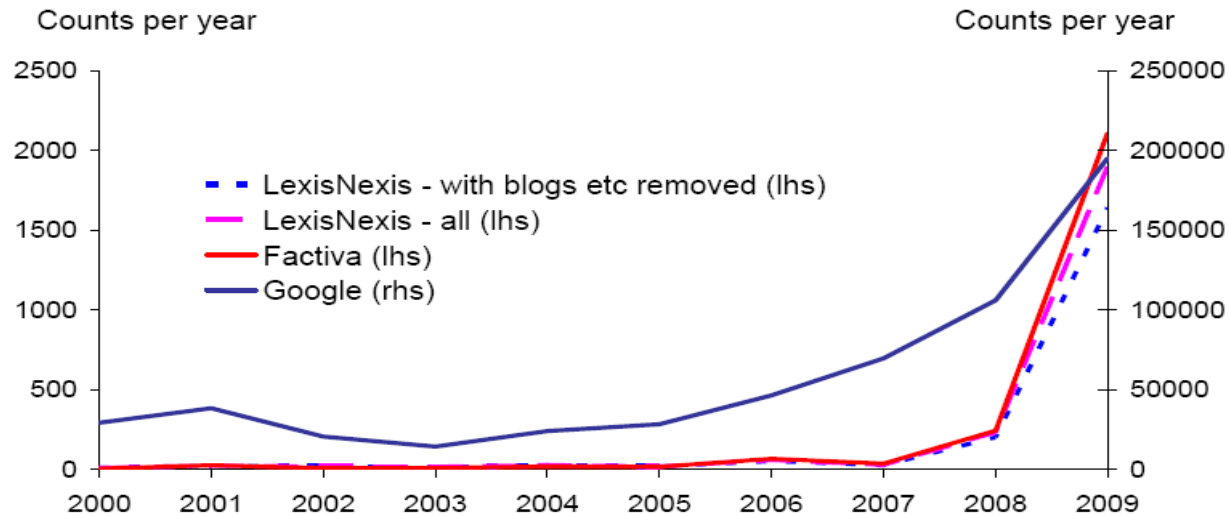
Motivations

- The US housing market as the catalyst of the recent financial crisis
- A credit boom that gone wrong?
- Correlation between house price busts and banking crises
- Towards a new consensus?

A new consensus?

⇒ **New consensus:** financial instability should be addressed with specific tools from a macro perspective: macro-prudential regulation or policies

Graph 1
Usage of the term "macroprudential"



Source : Galati (2010)

What is meant by macro-prudential regulation?

- scope?
- instruments?
- link with monetary policy?
- Pre-condition: identify financial imbalances (asset price booms & bust) in real time

Some concerns

- Stabilization policies: be aware that not all credit expansion nor all asset price booms are bad (trade-off financial stability – growth)
 - All assets are not alike
 - MFIs only?
- ⇒ More likely to address house price booms & busts

Main issues to be addressed

- 1) Assess the extent to which one can identify in a robust way asset price booms and busts
- 2) Disentangle costly booms from costless/low cost ones
- 3) Assess the extent to which housing booms differ from stock price booms? In particular are they more costly? Do they turn more systematically into busts / recessions?
- 4) Provide estimates of the probability an asset price booms turns into a bust / into a costly recession
- 5) Provide some scope for macro-prudential regulation & establish delineation between monetary and financial stability objectives

1) Identification procedures

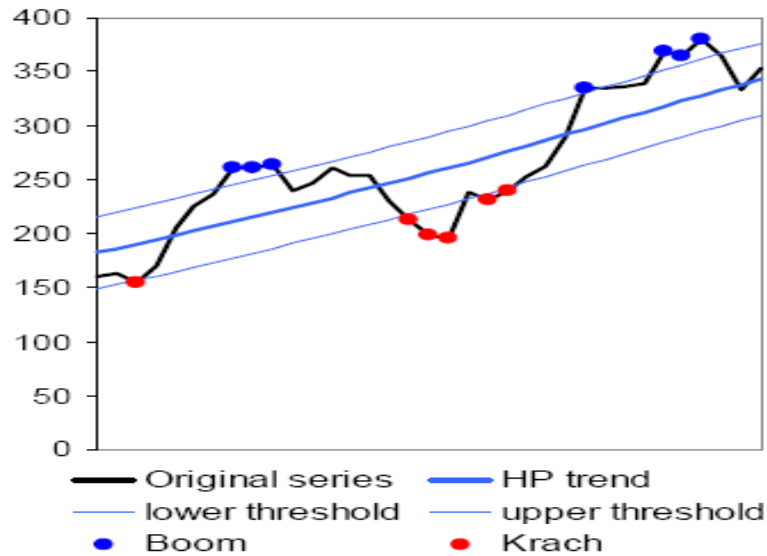


Figure 1: Hodrick-Prescott method

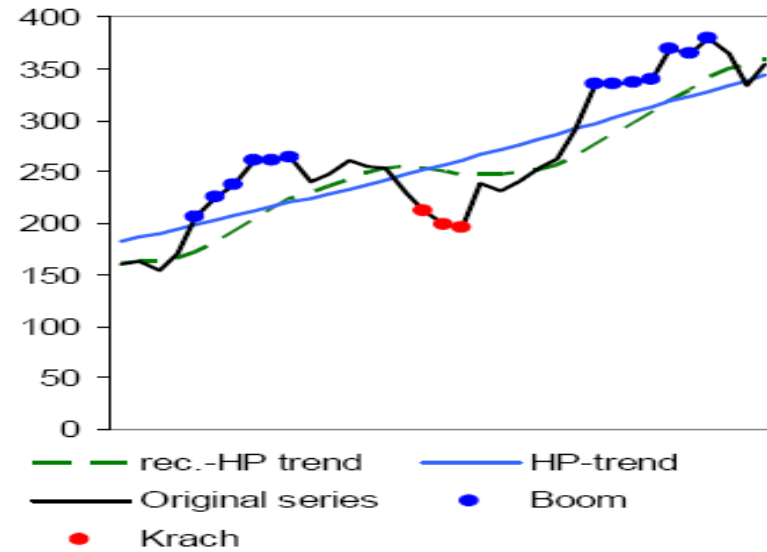


Figure 2: Recursive HP method

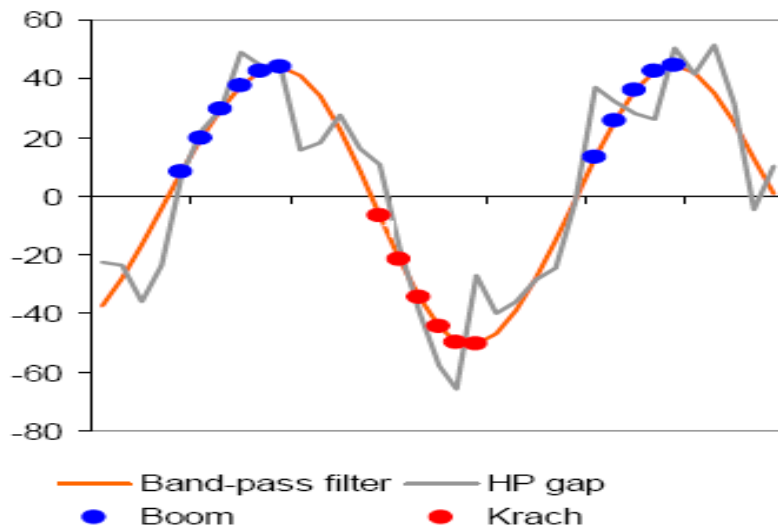


Figure 3: Band-Pass filter method

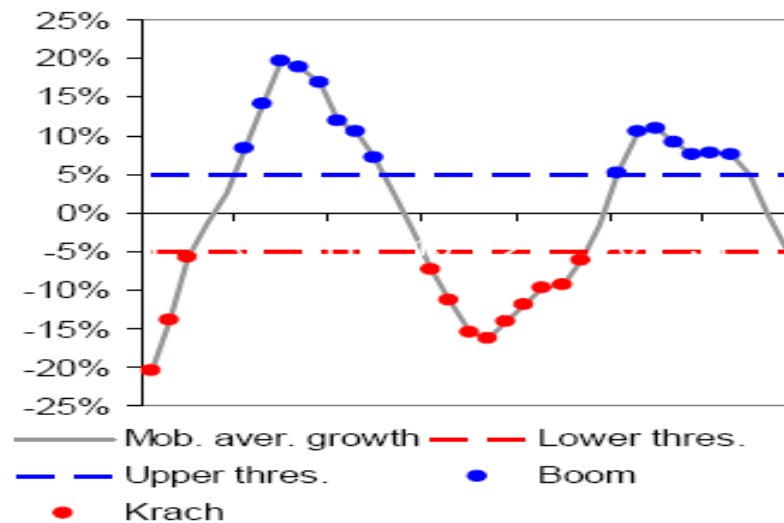


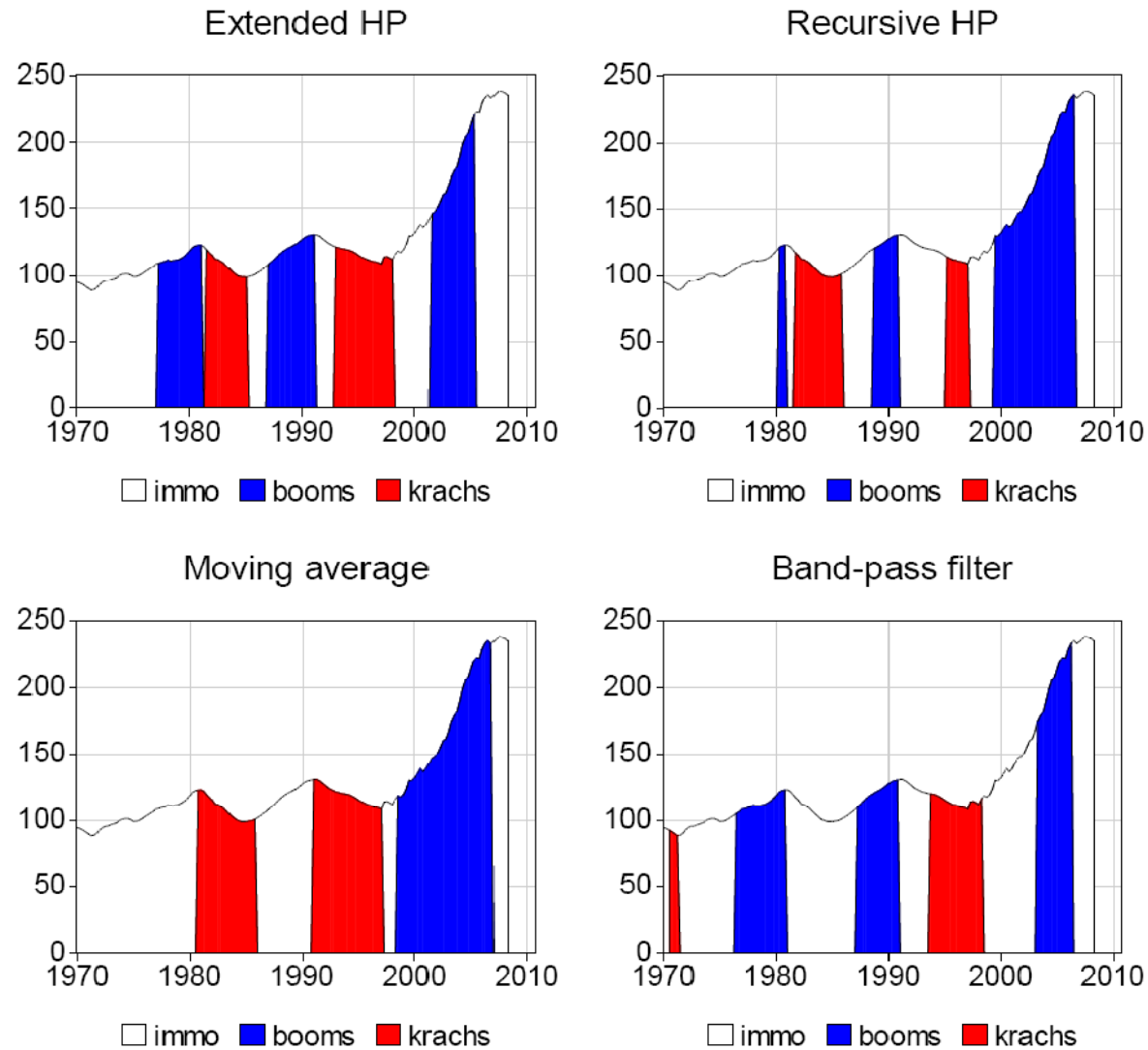
Figure 4: Moving-average method

2) Application

- 18 OECD countries: Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New-Zealand, Norway, Spain, Sweden, Switzerland, the United-States, the United-Kingdom
- Sample: 1970Q1 to 2008Q3
- (Real) House prices: source BIS
- Stock prices: IMF- IFS database + Thompson Financials (Datastream)
- "Costly" booms: a boom which is followed by a 3-year period in which real GDP growth has been at least 3 pp lower than potential GDP growth

2.1 Example

HOUSING (FRANCE)

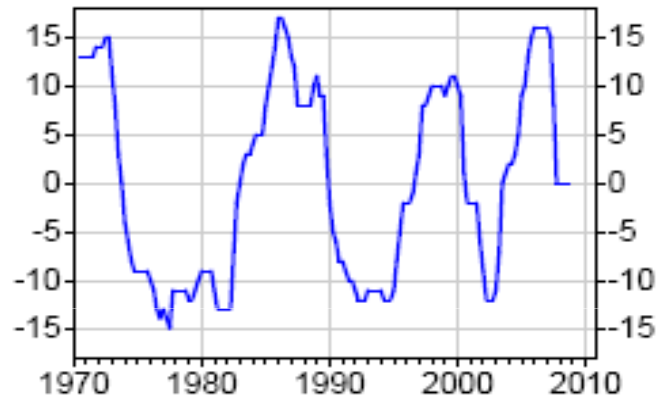


2.2 Overall results

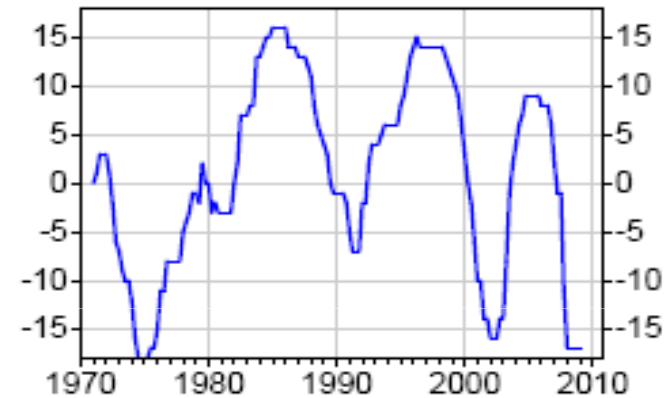
STOCK PRICES			HOUSING PRICES	
Moving-Average-based detection method*				
	Nb of episodes	Avg length	Nb of episodes	Avg length
Booms	55	18	51	19
costly	26	17	25	19
non costly	29	20	22	18
Busts	56	13	40	17
Recursive-HP-based detection method				
	Nb of episodes	Avg length	Nb of episodes	Avg length
Booms	58	9	45	9
costly	18	9	23	10
non costly	40	8	22	8
Busts	39	5	40	11
Extended-HP-based detection method				
	Nb of episodes	Avg length	Nb of episodes	Avg length
Booms	60	16	37	16
costly	29	16	23	15
non costly	31	16	14	18
Busts	66	14	34	16
Band-pass-filter-based detection method				
	Nb of episodes	Avg length	Nb of episodes	Avg length
Booms	70	10	42	14
costly	41	11	33	14
non costly	29	10	9	14
Busts	50	14	33	14

3.1 Stock price booms are more likely to be influenced by global factors

Band Pass filter



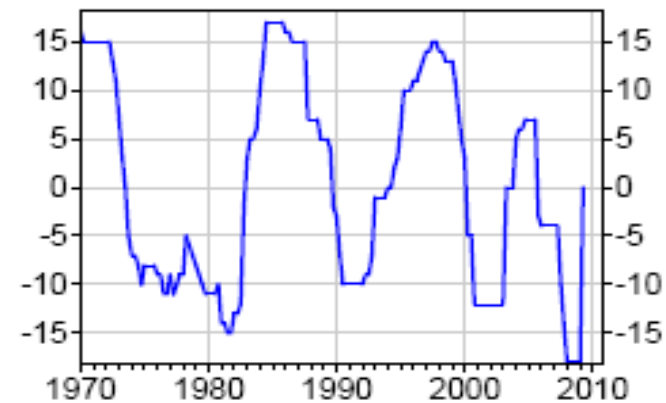
Moving Average



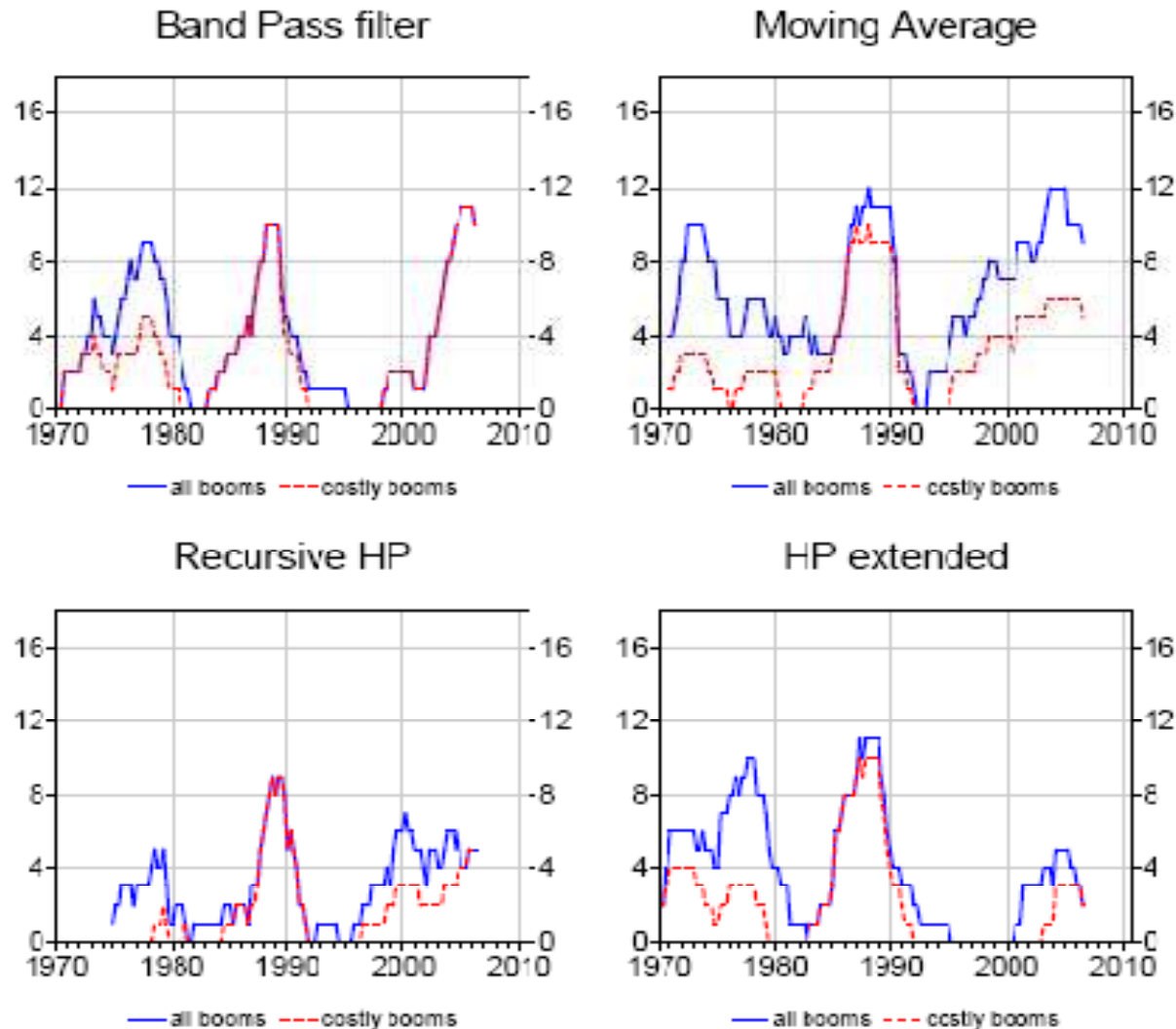
Recursive HP



HP extended



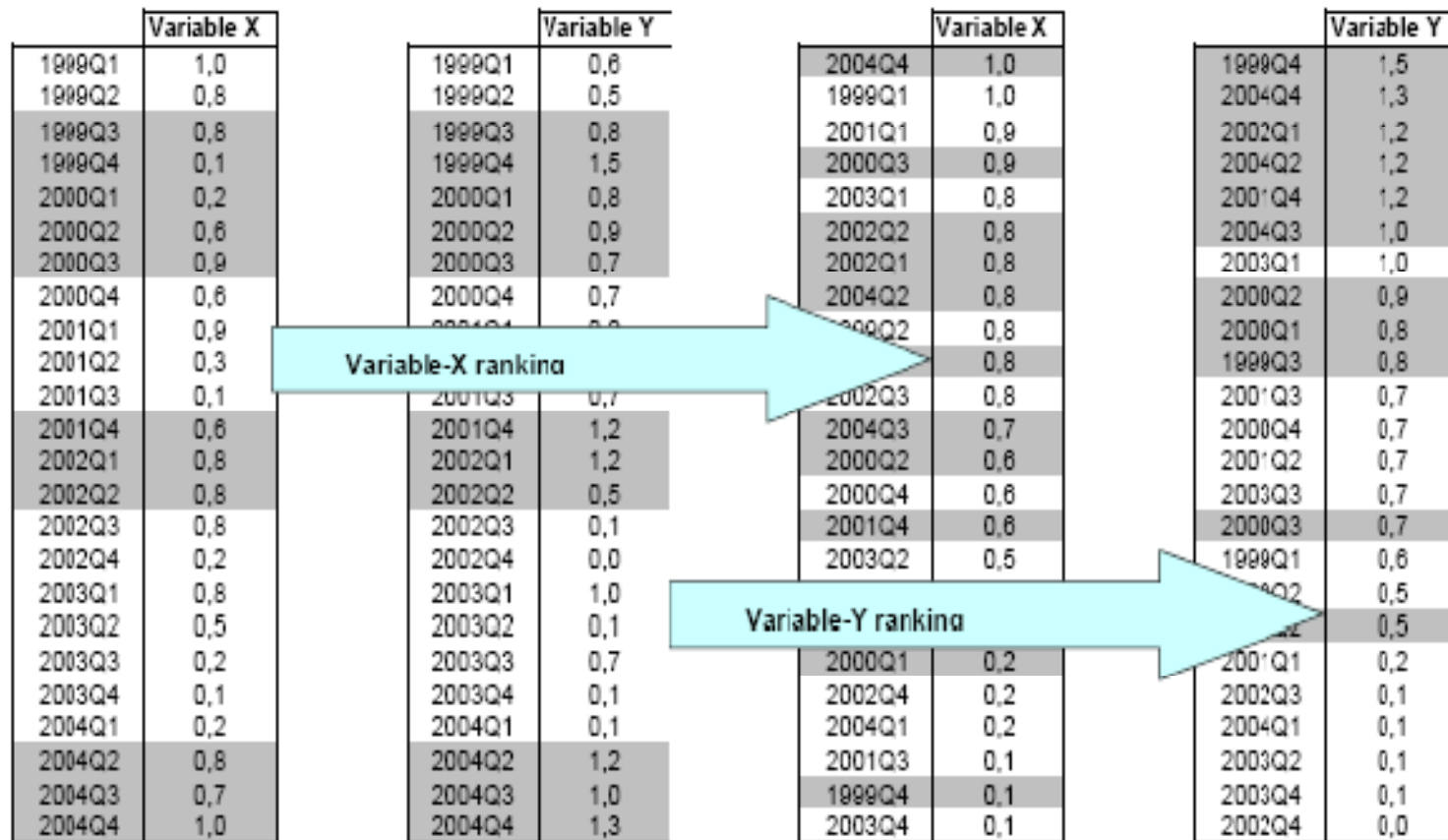
3.2 House price booms are more likely to turn into costly recessions



4. Potential sets of explanatory factors / theories

- Expectation channel: real economic variables
- « Credit view »: credit, leverage, overall bank balance sheet, financial accelerator
- « Money view »: importance of aggregate liquidity + role of funding liquidity
- Current account: global imbalances, capital flows
- Interest rate and risk taking channels

4.1 A non-parametric approach: intuition



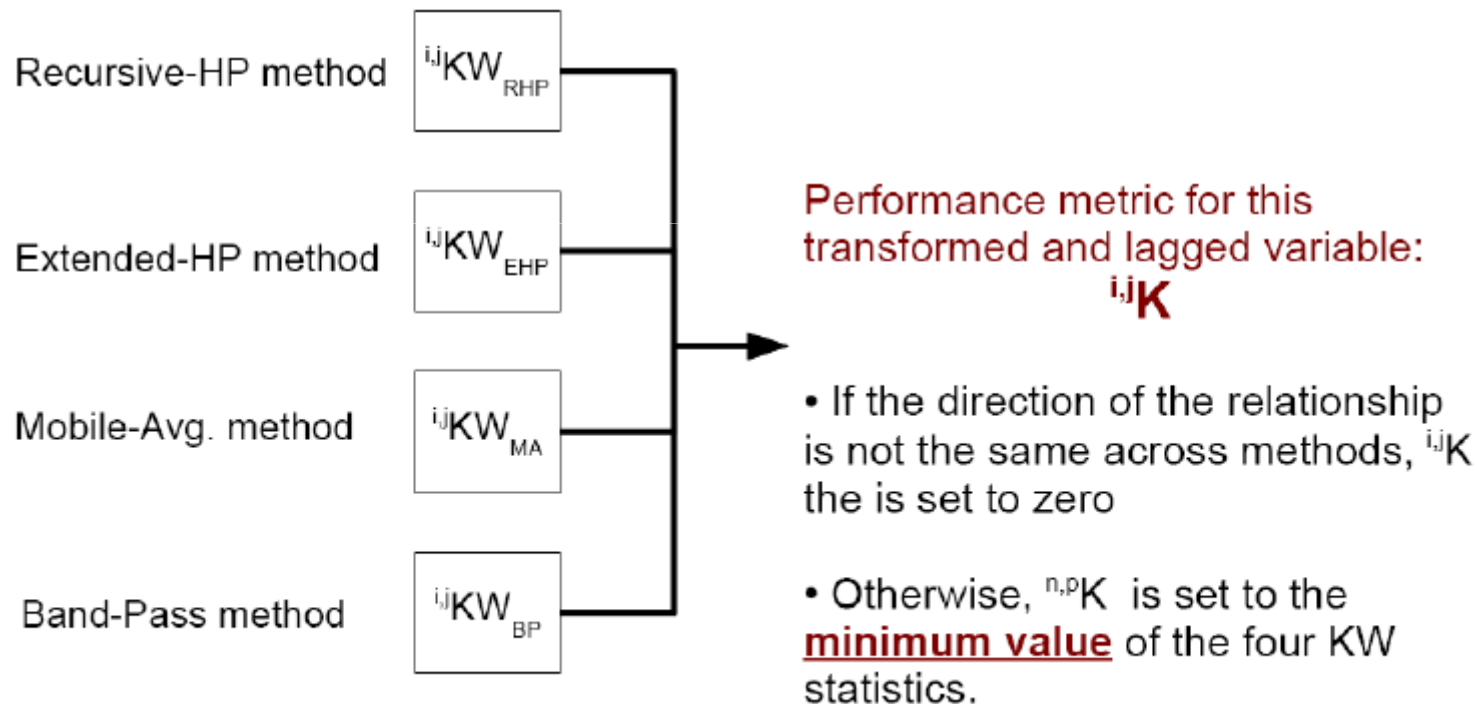
Shaded cells correspond to boom episodes.

No obvious link between ranking and Boom:
Low KW statistics

Clear link between ranking and Boom:
High KW statistics

4.1 Intuition (2)

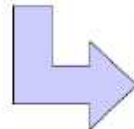
For a given variable X (credit, GDP...), the i^{th} transformation and the j^{th} lag:



4.1 Intuition (3)

For this variable X, once ${}^{ij}K$ is computed for the n transf. and the p lags:

${}^{1,1}KW$	${}^{1,2}KW$...	${}^{1,p-1}KW$	${}^{1,p}KW$
${}^{2,1}KW$	${}^{2,2}KW$...	${}^{2,p-1}KW$	${}^{2,p}KW$
...
...
...
${}^{n,1}KW$	${}^{n,2}KW$...	${}^{n,p-1}KW$	${}^{n,p}KW$



The final performance metric KW associated with variable X is the **maximum value** of the set of $\{{}^{ij}KW\}$.

Main robust determinants of asset booms

House prices

- **Booms vs. no booms:** Above trend real GDP (+; 0); Investment variables (+;0); Residential investment (+;0); Credit variables (+;2); nominal interest rates (-;4); above trend real money (+;3)
- **Costly vs. low costs booms:** Real interest rates (long & short) (+;4); above trend stock prices (+;0); Investment variables (+;1-4); credit y-o-y (+;1); real money y-o-y (+;0)

Stocks prices

- **Booms vs. no booms:** Above trend Credit (+) 3 out of 4; long-term interest rates (annual change); total investment y-o-y; House price gap (-);
- **Costly vs. low cost booms:** Real GDP gap (+); Housing price y-o-y (+ or -) not always significant;

4.2 A Logit model approach

- y_{it} a binary variable that is equal to 1 when country i is experiencing a boom in period t (and 0 otherwise).
- The logit model postulates that the probability distribution of y_{it} conditional on vector \mathbf{x}_{it} is defined by:

$$P(y_{it} = 1 | \mathbf{x}_{it}) = P(\mathbf{x}_{it}\beta + v_i)$$

where $P(z) = (1 + \exp(-z))^{-1}$

- Pooled regressions with random effects

4.2 Main results

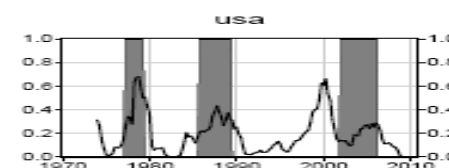
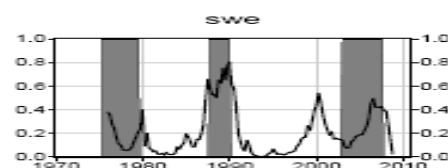
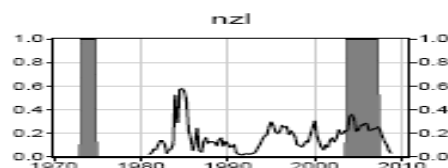
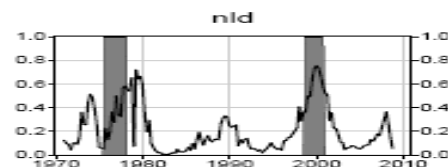
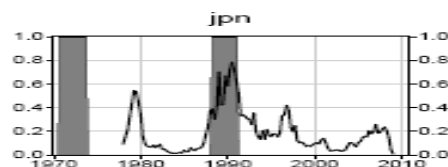
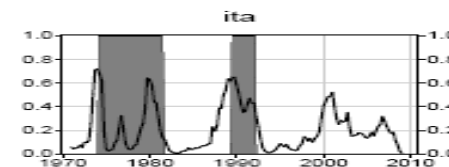
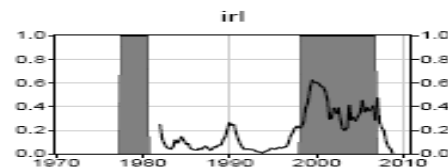
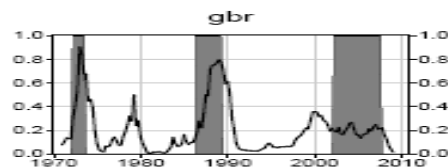
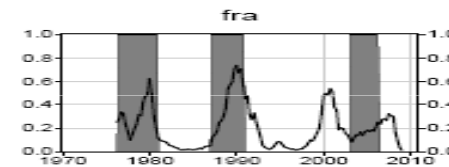
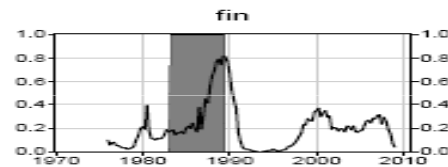
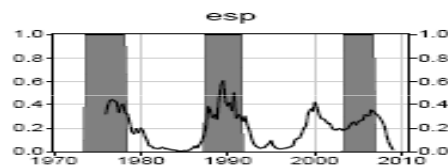
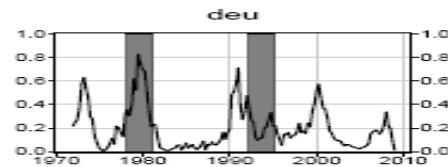
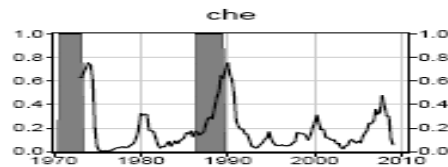
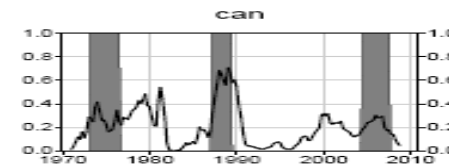
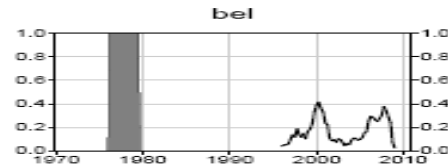
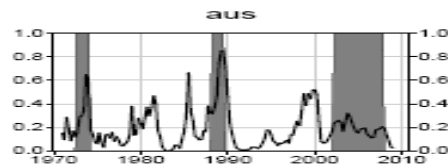
Main results - house prices

- **Booms vs no booms:** above trend real GDP (+;0); long-term interest rates (-;4); real credit growth (+;0)
- **Costly vs non costly/low cost booms:** Long-term interest rates (+;4) ; Real credit y-o-y (+;1); Above trend real stock prices (+;0)

Main results for stock prices

- **Booms vs no booms:** Above trend Credit (+;3) 3 out of 4; long-term interest rates (annual change; -;3); total investment y-o-y(+;0); House price gap (-;4);
- **Costly vs non costly/ low cost booms:** Real GDP gap (+;0); Housing price y-o-y (+ or -; 3) not always significant;

4.2 Example : house prices booms



5. Key policy implications

Findings:	Implications for Macro-prudential Policy:
<ul style="list-style-type: none">• Identification of asset price booms or bust <i>ex ante</i> is challenging (house prices)• Distinguishing between costly and non-costly booms <i>ex ante</i> is not feasible	<p>Regulation to prevent asset bubbles may be too ambitious</p> <p>A need for other instruments (local, sectoral rules; Pigouvian taxes)</p>
Booms can be costly or non-costly	Focus on costly booms only (state contingent policies)
Key differences in stock price and house price booms	<ul style="list-style-type: none">• Focus on house price developments• Case against aggregating stock and house prices
Credit is a major and significant determinant of house price booms	Address excessive developments in credit markets
Asymmetric role of interest rates	Interest rates are important in shaping asset price cycles